

**REMARKS**

Applicants respectfully request reconsideration of the present application in view of the foregoing amendments and in view of the reasons that follow. After amending the claims as set forth above, claims 4-5, 8, 16-18, and 21-28 are now pending in this application.

Applicants wish to thank the Examiner for the careful consideration given to the claims.

**Rejection based on 35 U.S.C. 112**

Claims 4-5, 8, 16-18, and 21-28 are rejected under 35 U.S.C. 112, second paragraph. The rejections are traversed for at least the following reasons.

As to claims 4 and 16, the PTO alleges that the term “a predetermined surface” is unclear. It is respectfully submitted that the adjective “predetermined” is clear and one with ordinary skill in the art would be apprised of its meaning. The PTO even concedes that a suitable definition (and one with ordinary skill in the art may use) could be “determined beforehand.” The fact that the specifics of the determination (e.g., who or what makes the determination, how far beforehand is the determination made) is not provided does not make the term unclear but only that the term has a broad meaning. Just because a term has a broad meaning does not make the term indefinite if one of ordinary skill in the art would understand the scope of the term’s meaning. MPEP 2173.01 provides:

Breadth of a claim is not to be equated with indefiniteness. *In re Miller*, 441 F.2d 689, 169 USPQ 597 (CCPA 1971). If the scope of the subject matter embraced by the claims is clear, and if applicants have not otherwise indicated that they intend the invention to be of a scope different from that defined in the claims, then the claims comply with 35 U.S.C. 112, second paragraph.

Applicants have not intended for the scope of the term “predetermined” to be different from its plain and ordinary meaning, and one with ordinary skill in the art would be well acquainted with the term’s plain and ordinary meaning. Thus, the term “predetermined surface” is clear and definite, and the rejection of claims 4 and 16 based on indefiniteness should be withdrawn.

As to claims 5 and 17, the PTO alleges that the term “substantially equal” is unclear. It is respectfully submitted that the adjective “substantially equal” is clear and one with ordinary skill in the art would be apprised of its meaning. MPEP 2173.05(b) provides:

The term “substantially” is often used in conjunction with another term to describe a particular characteristic of the claimed invention. It is a broad term. *In re Nehrenberg*, 280 F.2d 161, 126 USPQ 383 (CCPA 1960). The court held that the limitation “to substantially increase the efficiency of the compound as a copper extractant” was definite in view of the general guidelines contained in the specification. *In re Mattison*, 509 F.2d 563, 184 USPQ 484 (CCPA 1975). The court held that the limitation “which produces substantially equal E and H plane illumination patterns” was definite because one of ordinary skill in the art would know what was meant by “substantially equal.” *Andrew Corp. v. Gabriel Electronics*, 847 F.2d 819, 6 USPQ2d 2010 (Fed. Cir. 1988).

Thus, the mere use of the adverb “substantially” does not render claims 5 and 17 indefinite as clearly indicated in the MPEP and the case law. In this case, one of ordinary skill in the art would know what is meant by “substantially equal” and the PTO has not provided any explanation as to why one of ordinary skill in the art would not know its meaning. Because one of ordinary skill in the art would know the meaning of “substantially equal,” the term “substantially equal” is clear and definite, and the rejection of claims 5 and 17 based on indefiniteness should be withdrawn.

Furthermore, it is asserted that claim 5 is indefinite because there is insufficient antecedent basis for the term “the one of the scan lines.” It is respectfully submitted that there is ample antecedent basis for this limitation because claim 4 (from which claim 5 depends) recites “a first wire electrically connected to one of the scan lines.” Because there is sufficient antecedent basis for this limitation, claim 5 is clear and definite, and the rejection of claim 5 based on indefiniteness should be withdrawn.

As to claim 8, the PTO alleges that the term “display signals” recited in claim 8 and the “display signals” recited in claim 4 result in claim 8 being incomplete for omitting essential structural cooperative relationships of elements. It is respectfully submitted that no such omissions are present. First, the PTO is improperly reading the claims terms in a vacuum so as to achieve “omission” instead of reading the claims as a whole. Claim 4 recites “a plurality of data lines to which display signals are applied” meaning data lines are applied with display signals. Claim 8 recites “a first pixel electrode and a second pixel electrode that are supplied with display signals from one of the data lines,” which means that one of the data lines has a portion of the display signals. Thus, one with ordinary skill in the art would understand the relation between the display signals of claim 8 (display signals from one of the data lines) being a subset of the display signals of claim 4 (display signals supplied to all the

data lines). Because one of ordinary skill in the art would understand this relationship, claim 8 is not incomplete for omitting essential structural cooperative relationships of elements, and the rejection of claim 8 on this ground should be withdrawn.

Also, it is asserted that claim 8 is indefinite because there is insufficient antecedent basis for the term “the display signals.” It is respectfully submitted that there is ample antecedent basis for this limitation because claim 8 recites “a first pixel electrode and a second pixel electrode that are supplied with display signals from one of the data lines” which provided the necessary antecedent basis for “the display signals in the one of the data lines” and “a third switching device that is connected to the one of the data lines, the third switching device controlling a supply of the display signals to the second pixel electrode.” Because there is sufficient antecedent basis for these limitations, claim 8 is clear and definite, and the rejection of claim 8 based on indefiniteness should be withdrawn.

It is asserted that claim 17 is indefinite because there is insufficient antecedent basis for “a potential of a scan line other than the one of the scan lines.” It appears that the objection is due to the phrase “the one of the scan lines;” however, this feature has ample antecedent basis from claim 16 which recites “the first wire being electrically connected to one of the scan lines.” Because there is sufficient antecedent basis for this limitation, claim 17 is clear and definite, and the rejection of claim 17 based on indefiniteness should be withdrawn.

As to claim 18, the PTO alleges that the terms “a first scan line” and “a second scan line” from claim 18 and the terms “a plurality of scan lines” and “one of the scan lines” from claim 16 result in claim 18 being incomplete for omitting essential structural cooperative relationships of elements. Claim 18 has been amended to remove the terms “a first scan line” and “a second scan line,” thus rendering the alleged omission moot. Thus, the rejection of claim 18 on this ground should be withdrawn.

Furthermore, the PTO alleges that the terms “the supply of the first display signal” and “a supply of the first display signal” from claim 18 result in claim 18 being incomplete for omitting essential structural cooperative relationships of elements. Claim 18 has been amended to change “a supply of the first display signal” to “the supply of the first display signal,” which establishes the relationship between these two elements as being the same element. Thus, the rejection of claim 18 on this ground should be withdrawn.

The rejection of the remaining claims should be withdrawn for the same reason as their respective independent claims from which they depend.

For least these reasons, favorable reconsideration of the rejection is respectfully requested.

Rejection based on the APA

Claims 4-5, 16-17, and 21-28 are rejected under 35 U.S.C. 102(a) as being anticipated by the Instant Applications' Admitted Prior Art ("the APA"). This rejection is traversed for at least the following reasons.

Claim 4 recites, among other things, a plurality of data lines; a plurality of scan lines; a first wire electrically connected to one of the scan lines; a second wire; a second substrate; a liquid crystal layer disposed between the first and second substrates; and a spacer disposed between the first and second substrates. The spacer prescribes the thickness of the liquid crystal layer. The spacer is in direct physical contact with the entire predetermined surface of at least one of the first and second wires such that no portion of the at least one of the first and second wires is in direct physical contact with the liquid crystal layer. Claim 16 recites similar and/or analogous features. The APA does not teach or suggest this combination of features.

For example, Fig. 10 of the APA clearly shows that the liquid crystal layer 50 contacts a portion of wire 47. Furthermore, the spacer 51 of the APA can only prescribe the distance between the substrate and the counter substrate, but it is not in direct physical contact with the entire predetermined surface of at least one of the first and second wires. Thus, the APA does not teach a spacer that is in direct physical contact with the entire predetermined surface of at least one of the first and second wires such that no portion of the at least one of the first and second wires is in direct physical contact with the liquid crystal layer and that prescribes the second distance between the substrate and counter substrate.

The PTO asserts that the ion layer 34 of Fig. 6B is considered to be the spacer of claims 4 and 16. (Page 9 of the Office Action.) However, the ion layer 34 does not prescribe the thickness of the liquid crystal layer. Indeed, the ion layer 34 is not shown to span the thickness of the liquid crystal layer so it is not possible to prescribe the thickness of the liquid

crystal layer. Thus, the APA does not teach or suggest all the features of claim 4 or 16, and claims 4 and 16 are allowable over the prior art.

Claims 5, 17, and 21-28 depend from and have all the limitations of either claim 4 or claim 16, and are allowable for at least the reasons set forth above without regard to the further patentable features contained therein.

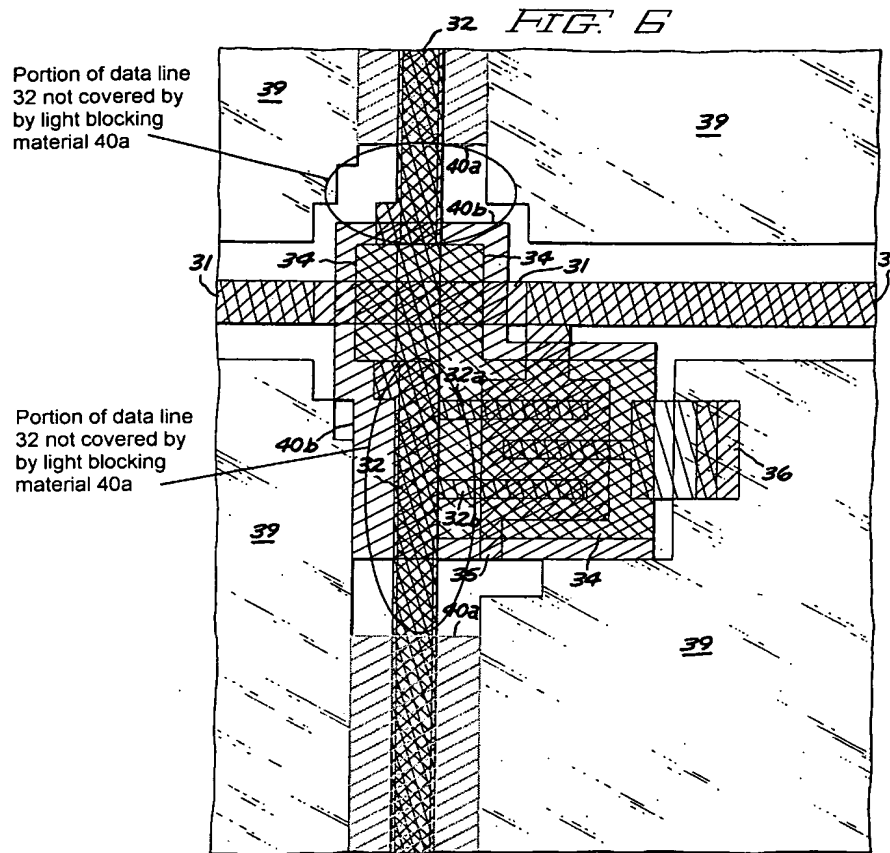
For at least these reasons, favorable reconsideration of the rejection is respectfully requested.

Rejection based on Castleberry or Castleberry and the APA

Claims 4-5, 16-17, and 21-28 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent 4,904,056 ("Castleberry"), under 35 U.S.C. 103(a) as being unpatentable over Castleberry and the APA, or under 35 U.S.C. 103(a) as being unpatentable over the APA and Castleberry. These rejections are traversed for at least the following reasons.

Claim 4 recites, among other things, a plurality of data lines; a plurality of scan lines; a first wire electrically connected to one of the scan lines; a second wire; a second substrate; a liquid crystal layer disposed between the first and second substrates; and a spacer disposed between the first and second substrates. The spacer prescribes the thickness of the liquid crystal layer. The spacer is in direct physical contact with the entire predetermined surface of at least one of the first and second wires such that no portion of the at least one of the first and second wires is in direct physical contact with the liquid crystal layer. Claim 16 recites similar and/or analogous features. Castleberry, the APA, or any combination of Castleberry and the APA does not teach or suggest this combination of features.

For example, Castleberry does not teach or suggest a spacer that is in direct physical contact with the entire predetermined surface of at least one of the first and second wires such that no portion of the at least one of the first and second wires is in direct physical contact with the liquid crystal layer. The PTO seems to consider the light blocking material 40a of Castleberry as the spacer of claims 4 and 16 and the data line 32 of Castleberry as the second wire of claims 4 and 16. (Page 13 of the Office Action.) However, Castleberry discloses that the light blocking material 40a is not in direct physical contact with the entire surface of the data line 32. It is clear that parts of surface of the data line 32 are not covered by the light blocking material 40a in FIG. 6 of Castleberry, as seen in the figure below.



Thus, Castleberry does not teach or suggest all the features of claim 4 or 16. The APA does not cure the deficiencies of Castleberry. The disclosure of the APA relied upon by the Examiner does not teach or suggest a spacer that is in direct physical contact with the entire predetermined surface of at least one of the first and second wires such that no portion of the at least one of the first and second wires is in direct physical contact with the liquid crystal layer. The PTO asserts that the APA teaches a spacer 51 (page 15 of the Office Action); however, this spacer 51 is not in direct physical contact with the entire predetermined surface of at least one of the first and second wires such that no portion of the at least one of the first and second wires is in direct physical contact with the liquid crystal layer. Because neither the spacer 51 of the APA nor the light blocking material 40a of Castleberry is in direct physical contact with the entire predetermined surface of at least one of the first and second wires such that no portion of the at least one of the first and second wires is in direct physical contact with the liquid crystal layer, no combination of Castleberry

and the APA teaches or suggests the spacer of claims 4 and 16. Thus, claims 4 and 16 are not rendered unpatentable over Castleberry in view of the APA or over the APA in view of Castleberry.

Claims 5, 17, and 21-28 depend from and have all the limitations of either claim 4 or claim 16, and are allowable for at least the reasons set forth above without regard to the further patentable features contained therein.

For at least these reasons, favorable reconsideration of the rejection is respectfully requested.

Rejection based on Castleberry and Kwon or Castleberry, the APA, and Kwon

Claims 8 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Castleberry in view of U.S. Patent 6,486,930 ("Kwon") or over Castleberry, the APA, and Kwon. Claims 8 and 18 depend from and have all the limitations of either claim 4 or 16. As previously mentioned, Castleberry, alone or in combination with the APA, does not teach or suggest all the features of claims 4 and 16, particularly the spacer of claim 4 or 16. Kwon fails to cure these deficiencies. For at least these reasons, favorable reconsideration of the rejection is respectfully requested.

Rejection based on the APA and Watanabe

Claims 4-5, 16-17, 21-22, 24, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over the APA in view of U.S. Patent 5,150,239 ("Watanabe"). This rejection is traversed for at least the following reasons.

Claim 4 recites, among other things, a plurality of data lines; a plurality of scan lines; a first wire electrically connected to one of the scan lines; a second wire; a second substrate; a liquid crystal layer disposed between the first and second substrates; and a spacer disposed between the first and second substrates. The spacer prescribes the thickness of the liquid crystal layer. The spacer is in direct physical contact with the entire predetermined surface of at least one of the first and second wires such that no portion of the at least one of the first and second wires is in direct physical contact with the liquid crystal layer. Claim 16 recites similar and/or analogous features. The APA, Watanabe, or any combination thereof does not teach or suggest this combination of features.

For example, Fig. 10 of the APA clearly shows that the liquid crystal layer 50 contacts a portion of wire 47. Furthermore, the spacer 51 of APA can only prescribe the distance between the substrate and the counter substrate, but it is not in direct physical contact with the entire predetermined surface of at least one of the first and second wires. Thus, the APA does not teach a spacer that is in direct physical contact with the entire predetermined surface of at least one of the first and second wires such that no portion of the at least one of the first and second wires is in direct physical contact with the liquid crystal layer and that prescribes the second distance between the substrate and counter substrate.

Watanabe does not cure the deficiencies of the APA because Watanabe does not teach or suggest a spacer that prescribes the thickness of the liquid crystal layer and that is in direct physical contact with the entire predetermined surface of at least one of the first and second wires such that no portion of the at least one of the first and second wires is in direct physical contact with the liquid crystal layer. The PTO alleges that Watanabe discloses a spacer in the form of the combination of the insulating layer 104, the alignment film 105, the spacer 108, and the adhesive layer. (Page 27 of the Office Action.) This interpretation by the PTO is improper because it arbitrarily interprets any unrelated element touching the spacer 108 as part of the spacer.

Watanabe already clearly characterizes the element 108 as a spacer that is for holding the thickness of the liquid crystal layer. (Column 3, lines 23-25 of Watanabe.) To combine the insulation layer 104, the alignment film 105 and the adhesive 109 with the spacer 108 as a spacer is arbitrary and unreasonable because thickness of the insulation layer 104, the alignment film 105 and the adhesive 109 will not influence the thickness of liquid crystal layer, which the spacer 108 is intended to do. The thickness of liquid crystal layer depends on the thickness of the cavity between two opposing substrates. Since the insulation layer 104 and the alignment film 105 are flat and have no cavity for liquid crystal layer, both of them cannot influence the thickness of liquid crystal layer.<sup>1</sup> Since the adhesive 109 is soft before being hardened, the thickness of the cavity decides the thickness of the adhesive 109 rather

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<sup>1</sup> The PTO attempts to use the analogy that “adding extra bologna between two slices of bread inherently prescribes the thickness of the resulting sandwich” (pages 37-38 of the Office Action), but this analogy is inappropriate. Adding bologna between two slices of bread (the substrates) does not prescribe the overall distance between the two slices.

than the thickness of the adhesive 109 decides the thickness of the cavity. The only element that will influence the thickness of the cavity is the spacer 108. Therefore the only element that will influence the thickness of liquid crystal is the spacer 108 as described in Watanabe. The arbitrary unification of these elements as a “spacer,” which is contrary to how one with ordinary skill in the art would interpret the teachings of Watanabe and the present specification, is simply not reasonable. It is analogous to saying that snowball is considered to be part of a table merely because the snowball sits on the table.

Furthermore, asserting that the combination of the insulation layer 104, the alignment film 105 and the adhesive 109 with the spacer 108 is analogous to the spacer 51 of the APA is changing the function of the insulation layer 104, the alignment film 105 and the adhesive 109 to a spacer, which makes such an interpretation improper. MPEP 2143 provides that a finding that one of ordinary skill in the art could have combined the elements as claimed by known methods cannot be found if each element does not perform the same function as it does separately. (MPEP 2143.) Also, the present case is a situation quite different from *Ex parte Smith*, Board of Patent Appeals and Interferences (decided June 25, 2007) (precedential decision). In *Smith*, a rejection based on obviousness was upheld because the elements that were combined from various references did not change their respective functions,<sup>2</sup> which is not the case here. Thus, the interpretation of the insulation layer 104, the alignment film 105 and the adhesive 109 as part of the spacer 108 is improper and should be withdrawn.

Also, because the spacers 108 of Watanabe are not in direct physical contact with the entire surface of at least one of the first and second wires, neither Watanabe nor APA discloses that “the spacer is in direct physical contact with the entire surface of at least one of the first and second wires” as claimed in claims 4 and 16, the rejections should be withdrawn.

The PTO provides six rationales for making the proposed combination on pages 28-29 of the Office Action, which are all improper, because they are conclusory in nature and provide no factual basis or articulated reasoning contrary to MPEP 2142 and the case law. MPEP 2142 provides:

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<sup>2</sup> “[E]ach of the elements of Wyant, Dick, and Ruebens combined by the Examiner performs the same function when combined as it does in the prior art. Thus, such a combination would have yielded predictable results.” *Ex Parte Smith* at 22.

The key to supporting any rejection under 35 U.S.C. 103 is the clear articulation of the reason(s) why the claimed invention would have been obvious. The Supreme Court in *KSR International Co. v. Teleflex Inc.*...82 USPQ2d 1385, 1396 (2007) noted that the analysis supporting a rejection under 35 U.S.C. 103 should be made explicit. The Federal Circuit has stated that “rejections on obviousness cannot be sustained with mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” *In re Kahn*, 441 F.3d 977, 988, 78 USPQ2d 1329, 1336 (Fed. Cir. 2006). See also *KSR*,...82 USPQ2d at 1396 (quoting Federal Circuit statement with approval).

The PTO has not providing any such articulated reasoning. Thus, the proposed modification of the APA based on Watanabe is improper, and the rejection should be withdrawn.

Furthermore, the six rationales for making the proposed combination on pages 28-29, as enumerated in MPEP 2143, each requires the PTO to make several fact findings, which have not been established. Because the fact findings have not been set forth for each rationale, any rejection based on these rationales is improper, and the rejection should be withdrawn.

Because no combination of the APA and Watanabe teaches or discloses all the features of claim 4 and 16 and the combination is improper, claims 4 and 16 are not rendered unpatentable over the prior art.

Claims 5, 17, 21-22, 24, and 27 depend from and have all the limitations of either claim 4 or claim 16, and are allowable for at least the reasons set forth above without regard to the further patentable features contained therein.

For at least these reasons, favorable reconsideration of the rejection is respectfully requested.

Rejection of claims 8 and 18 based on the APA, Watanabe and Kwon

Claims 8 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over the APA and Watanabe in view of Kwon. Claims 8 and 18 depend from and have all the limitations of either claim 4 or 16. As previously mentioned, no combination of the APA and Watanabe teaches all the features of claims 4 and 16, particularly the spacer of claim 4 or 16, and the combination of the APA and Watanabe is improper. Kwon fails to cure these

deficiencies. For at least these reasons, favorable reconsideration of the rejection is respectfully requested.

Conclusion

Applicants believe that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing or a credit card payment form being unsigned, providing incorrect information resulting in a rejected credit card transaction, or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicants hereby petition for such extension under 37 C.F.R. §1.136 and authorize payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

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By 

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